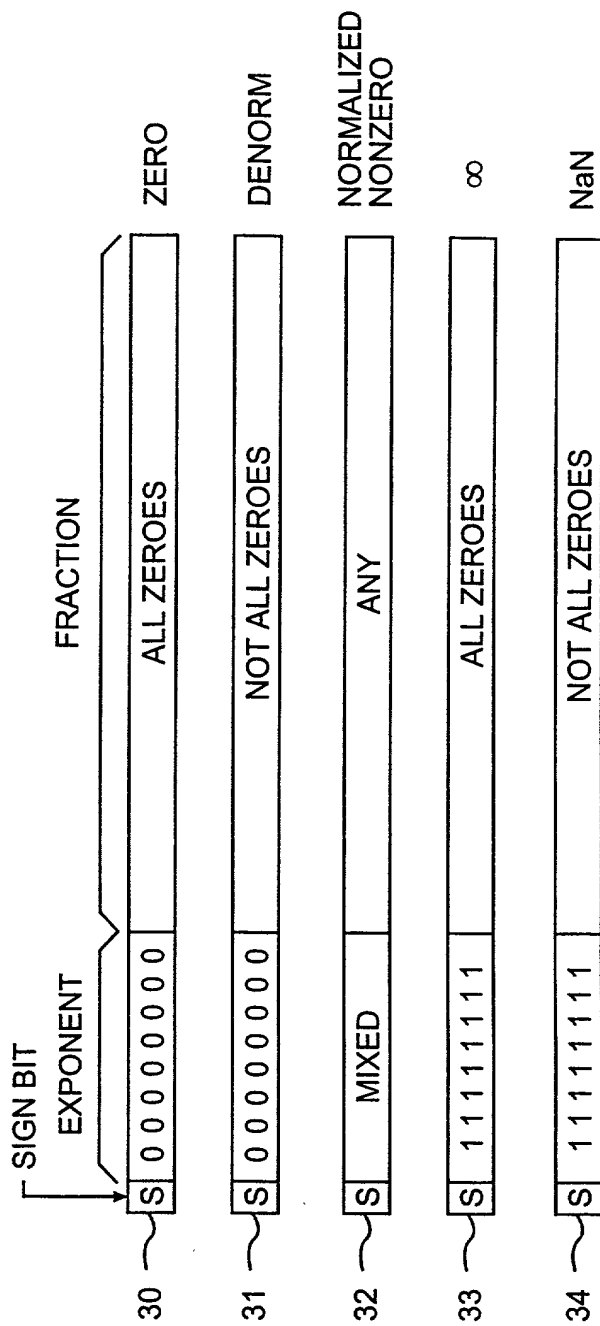


**FIG. 1**  
PRIOR ART



**FIG. 2**  
PRIOR ART

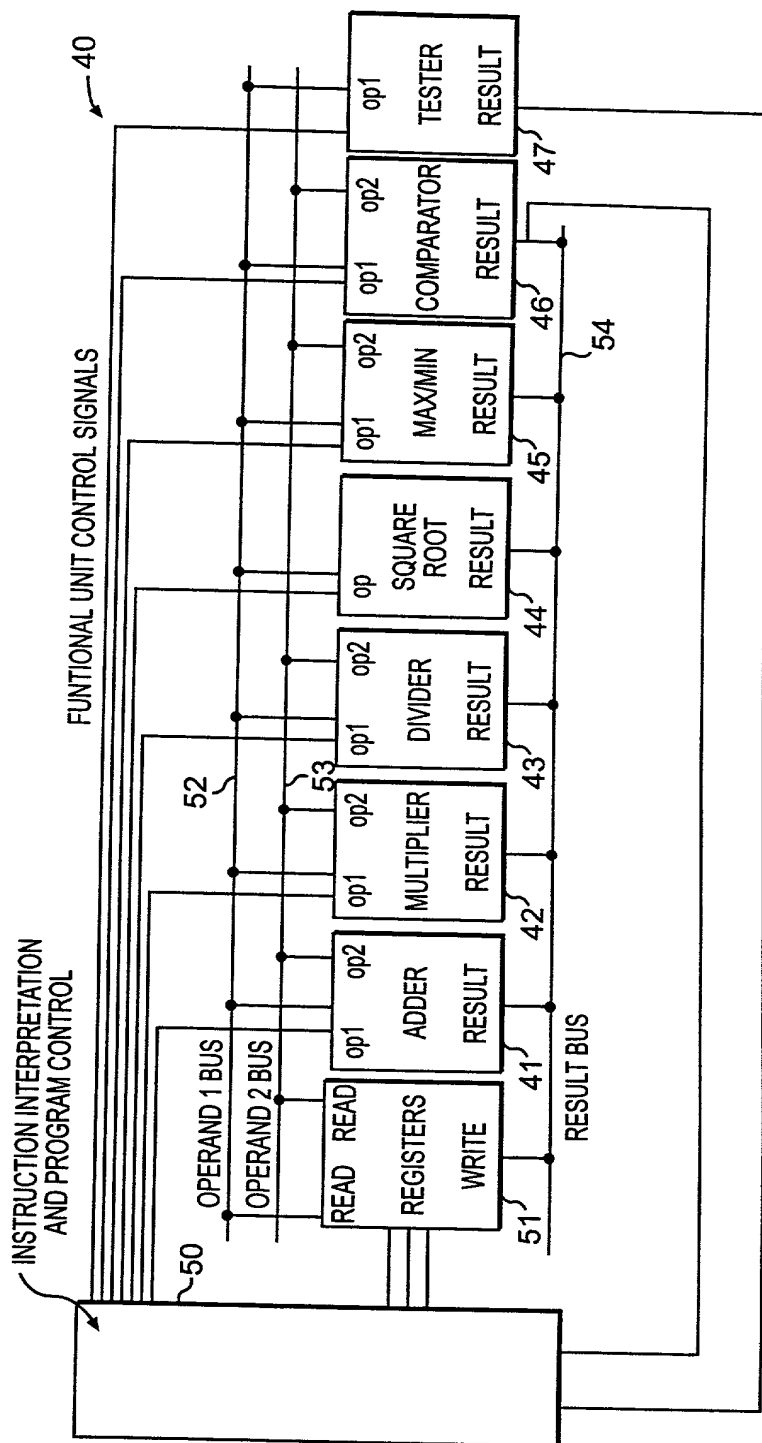


FIG. 3

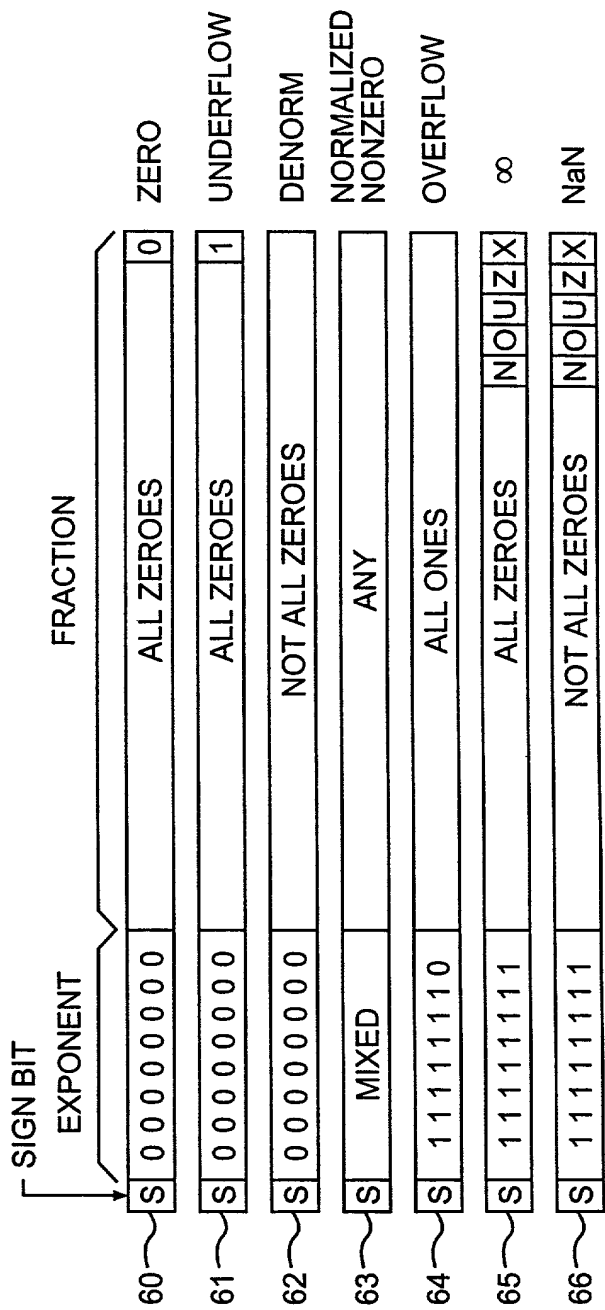


FIG. 4

+	$-\infty$	-OV	-Q	-UN	-0	0	+UN	+Q	+OV	$+\infty$	NaN
$-\infty$	(a)	(b)	(c)	(c)	(c)	(c)	(c)	(c)	(b)	(d)	(e)
-OV	(b)	-OV	-OV	-OV	-OV	-OV	(f)	(g)	(h)	(i)	(j)
-P	(c)	-OV	(k)	(l)	-P	-P	(m)	(n)	(o)	(p)	(q)
-UN	(c)	-OV	(l)	(r)	-UN	-UN	(s)	(l)	(t)	(p)	(u)
-0	(c)	-OV	-Q	-UN	-0	(v)	+UN	+Q	+OV	(p)	(q)
0	(c)	-OV	-Q	-UN	(v)	+0	+UN	+Q	+OV	(p)	(q)
+UN	(c)	(f)	(m)	(s)	+UN	+UN	(w)	(m)	+OV	(p)	(u)
+P	(c)	(g)	(n)	(l)	+P	+P	(m)	(x)	+OV	(p)	(q)
+OV	(b)	(h)	(o)	(t)	+OV	+OV	+OV	+OV	+OV	(l)	(j)
$+\infty$	(d)	(i)	(p)	(p)	(p)	(p)	(p)	(p)	(i)	(y)	(e)
NaN	(e)	(j)	(q)	(u)	(q)	(q)	(u)	(q)	(j)	(e)	(z)

**FIG. 5**

*	-∞	-OV	-Q	-1	-S	-UN	-0	+0	+UN	+S	+1	+Q	+OV	+∞	NaN
-∞	(a)	(b)	(c)	(c)	(c)	(d)	(e)	(f)	(g)	(h)	(h)	(h)	(i)	(j)	(k)
-OV	(b)	+OV	+OV	+OV	(l)	(m)	+0	-0	(n)	(o)	-OV	-OV	-OV	(i)	(p)
-P	(c)	+OV	(q)	(q)	(q)	(r)	+0	-0	(s)	(t)	(t)	(t)	-OV	(h)	(u)
-1	(c)	+OV	(q)	(q)	(q)	+UN	+0	-0	-UN	(t)	(t)	(t)	-OV	(h)	(u)
-R	(c)	(l)	(q)	(q)	(q)	+UN	+0	-0	-UN	(t)	(t)	(t)	(v)	(h)	(u)
-UN	(d)	(m)	(r)	+UN	+UN	+UN	+0	-0	-UN	-UN	-UN	(w)	(n)	(g)	(x)
-0	(e)	+0	+0	+0	+0	+0	+0	-0	-0	-0	-0	-0	-0	(f)	(u)
+0	(f)	-0	-0	-0	-0	-0	-0	+0	+0	+0	+0	+0	+0	(e)	(u)
+UN	(g)	(n)	(s)	-UN	-UN	-UN	-0	+0	+UN	+UN	+UN	(y)	(m)	(d)	(x)
+R	(h)	(o)	(t)	(t)	(t)	-UN	-0	+0	+UN	(q)	(q)	(q)	(z)	(c)	(u)
+1	(h)	-OV	(t)	(t)	(t)	-UN	-0	+0	+UN	(q)	(q)	(q)	+OV	(c)	(u)
+P	(h)	-OV	(t)	(t)	(t)	(w)	-0	+0	(y)	(q)	(q)	(q)	+OV	(c)	(u)
+OV	(i)	-OV	-OV	-OV	(v)	(n)	-0	+0	(m)	(z)	+OV	+OV	+OV	(b)	(p)
+∞	(j)	(i)	(h)	(h)	(h)	(g)	(f)	(e)	(d)	(c)	(c)	(c)	(b)	(a)	(k)
NaN	(k)	(p)	(u)	(u)	(u)	(x)	(u)	(u)	(x)	(u)	(u)	(u)	(p)	(k)	(@)

FIG. 6

/	-∞	-OV	-Q	-1	-S	-UN	-0	+0	+UN	+S	+1	+Q	+OV	+∞	NaN
-∞	(a)	(b)	(c)	(c)	(c)	(d)	(c)	(e)	(f)	(e)	(e)	(e)	(g)	(h)	(i)
-OV	+0	(j)	(k)	+OV	+OV	+OV	(l)	(m)	-OV	-OV	-OV	(n)	(o)	-0	(p)
-P	+0	(q)	(r)	(r)	(r)	+OV	(s)	(t)	-OV	(u)	(u)	(u)	(v)	-0	(w)
-1	+0	(q)	(r)	(r)	(r)	+OV	(s)	(t)	-OV	(u)	(u)	(u)	(v)	-0	(w)
-R	+0	(q)	(r)	(r)	(r)	(x)	(s)	(t)	(y)	(u)	(u)	(u)	(v)	-0	(w)
-UN	+0	+UN	+UN	+UN	(z)	(1)	(2)	(3)	(4)	(5)	-UN	-UN	-UN	-0	(6)
-0	+0	+0	+0	+0	+0	+0	(7)	(8)	-0	-0	-0	-0	-0	-0	(w)
+0	-0	-0	-0	-0	-0	-0	(8)	(7)	+0	+0	+0	+0	+0	+0	(w)
+UN	-0	-UN	-UN	-UN	(9)	(4)	(3)	(2)	(1)	(@)	+UN	+UN	+UN	+0	(6)
+R	-0	(#)	(u)	(u)	(u)	(\$)	(t)	(s)	(%)	(r)	(r)	(r)	(^)	+0	(w)
+1	-0	(#)	(u)	(u)	(u)	-OV	(t)	(s)	+OV	(r)	(r)	(r)	(^)	+0	(w)
+P	-0	(#)	(u)	(u)	(u)	-OV	(t)	(s)	+OV	(r)	(r)	(r)	(^)	+0	(w)
+OV	-0	(o)	(&)	-OV	-OV	-OV	(m)	(l)	+OV	+OV	+OV	(*)	(i)	+0	(p)
+∞	(h)	(g)	(e)	(e)	(e)	(f)	(e)	(c)	(d)	(c)	(c)	(c)	(b)	(a)	(i)
NaN	(i)	(p)	(w)	(w)	(w)	(6)	(w)	(w)	(6)	(w)	(w)	(w)	(p)	(i)	(~)

FIG. 7

rem	$-\infty$	-OV	-Q	-UN	-0	+0	+UN	+Q	+OV	$+\infty$	NaN
$-\infty$	(a)	(b)	(c)	(d)	(e)	(e)	(d)	(c)	(b)	(a)	(f)
-OV	(g)	(h)	(i)	(j)	(k)	(k)	(j)	(i)	(h)	(g)	(l)
-P	-P	(m)	(n)	(o)	(p)	(p)	(o)	(n)	(m)	-P	(q)
-UN	-UN	(r)	-UN	(o)	(s)	(s)	(o)	-UN	(r)	-UN	(t)
-0	-0	(m)	-0	(o)	(p)	(p)	(o)	-0	(m)	-0	(q)
+0	+0	(m)	+0	(o)	(p)	(p)	(o)	+0	(m)	+0	(q)
+UN	+UN	(r)	+UN	(o)	(s)	(s)	(o)	+UN	(r)	+UN	(t)
+P	+P	(m)	(n)	(o)	(p)	(p)	(o)	(n)	(m)	+P	(q)
+OV	(g)	(h)	(i)	(j)	(k)	(k)	(j)	(i)	(h)	(g)	(l)
$+\infty$	(a)	(b)	(c)	(d)	(e)	(e)	(d)	(c)	(b)	(a)	(f)
NaN	(u)	(v)	(w)	(x)	(w)	(w)	(x)	(w)	(v)	(u)	(y)

FIG. 8



SQRT	
-∞	THE RESULT IS THE POSITIVE NaN VALUE 0 11111111 10000000000011001 0UZX (TO INDICATE "SQUARE ROOT OF LESS THAN ZERO" WITH THE INVALID OPERATION FLAG SET), WHERE 0UZX IS THE FOUR LEAST SIGNIFICANT BITS $f_{lsb+3} \dots f_{lsb}$ OF THE FRACTION FIELD OF THE OPERAND
-OV	THE RESULT IS THE POSITIVE NaN VALUE 0 11111111 1000000000000110011001 (TO INDICATE "SQUARE ROOT OF LESS THAN ZERO" WITH THE INVALID OPERATION, OVERFLOW, AND INEXACT FLAGS SET).
.P	THE RESULT IS THE POSITIVE NaN VALUE 0 11111111 1000000000000110010000 (TO INDICATE "SQUARE ROOT OF LESS THAN ZERO" WITH THE INVALID OPERATION FLAG SET).
-UN	THE RESULT IS THE POSITIVE NaN VALUE 0 11111111 1000000000000110010101 (TO INDICATE "SQUARE ROOT OF LESS THAN ZERO" WITH THE INVALID OPERATION, UNDERFLOW, AND INEXACT FLAGS SET).
-0	THE RESULT IS -0.
+0	THE RESULT IS +0.
+UN	FOR "ROUND TOWARD PLUS INFINITY", THE RESULT IS THE SAME AS IF +UN WERE REPLACED BY +TINY; FOR ALL OTHER ROUNDING MODES, THE RESULT IS +UN.
+P	THE RESULT IS AS COMPUTED IN ACCORDANCE WITH IEEE STD. 754.
+OV	FOR "ROUND TOWARD MINUS INFINITY", THE RESULT IS THE SAME AS IF +OV WERE REPLACED BY +HUGE; FOR ALL OTHER ROUNDING MODES, THE RESULT IS +OV.
+∞	THE RESULT IS THE SAME AS THE OPERAND.
NaN	THE RESULT IS THE SAME NaN VALUE, EXCEPT THAT THE SIGN OF THE RESULT IS ALWAYS +.

**FIG. 9**



max	-∞	-OV	-Q	-UN	-0	+0	+UN	+Q	+OV	+∞	NaN
-∞	(a)	-OV	-Q	-UN	-0	+0	+UN	+Q	+OV	(b)	(c)
-OV	-OV	-OV	-Q	-UN	-0	+0	+UN	+Q	+OV	(b)	(d)
-P	-P	-P	(e)	-UN	-0	+0	+UN	+Q	+OV	(b)	(f)
-UN	-UN	-UN	-UN	-UN	-0	+0	+UN	+Q	+OV	(b)	(g)
-0	-0	-0	-0	-0	-0	+0	+UN	+Q	+OV	(b)	(f)
+0	+0	+0	+0	+0	+0	+0	+UN	+Q	+OV	(b)	(f)
+UN	+UN	+UN	+UN	+UN	+UN	+UN	+UN	+Q	+OV	(b)	(g)
+P	+P	+P	+P	+P	+P	+P	+P	(h)	+OV	(b)	(f)
+OV	+OV	+OV	+OV	+OV	+OV	+OV	+OV	+OV	+OV	(b)	(d)
+∞	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(i)	(c)
NaN	(c)	(d)	(f)	(g)	(f)	(f)	(g)	(f)	(d)	(c)	(j)

**FIG. 10**

min	$-\infty$	-OV	-Q	-UN	-0	+UN	+Q	+OV	$+\infty$	NaN
$-\infty$	(a)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(c)
-OV	(b)	-OV	-OV	-OV	-OV	-OV	-OV	-OV	-OV	(d)
-P	(b)	-OV	(e)	-P	-P	-P	-P	-P	-P	(f)
-UN	(b)	-OV	-Q	-UN	-UN	-UN	-UN	-UN	-UN	(g)
-0	(b)	-OV	-Q	-UN	-0	-0	-0	-0	-0	(f)
+0	(b)	-OV	-Q	-UN	-0	+0	+0	+0	+0	(f)
+UN	(b)	-OV	-Q	-UN	-0	+0	+UN	+UN	+UN	(g)
+P	(b)	-OV	-Q	-UN	-0	+0	(h)	+P	+P	(f)
+OV	(b)	-OV	-Q	-UN	-0	+0	+P	+OV	+OV	(d)
$+\infty$	(b)	-OV	-Q	-UN	-0	+0	+P	+OV	(i)	(c)
NaN	(c)	(d)	(f)	(g)	(f)	(g)	(f)	(d)	(c)	(j)

FIG. 11